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CENTRAL INTELLIGENCE AGENCY  
WASHINGTON, D.C. 20505

Control No. 9633  
29 May 1975

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MEMORANDUM FOR: Mr. Harvey Shapiro  
Office of the Assistant Secretary  
for International Affairs  
Department of the Treasury

SUBJECT : Impact of Devaluation on  
Bangladesh's Foreign Trade

The attached assessment of the potential effects  
of the recent Bangladesh devaluation may be of interest  
to you. Our conclusions are somewhat tentative in view  
of data gaps and uncertainties surrounding underlying  
assumptions. Any questions or comments concerning this  
analysis should be addressed

Chief  
South Asia Branch  
Economic Research

Attachment:  
As stated

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CENTRAL INTELLIGENCE AGENCY  
WASHINGTON, D.C. 20505

Control No. 9630  
27 May 1975

MEMORANDUM FOR: Ann E. Griffin  
NEA/PAB  
Department of State

SUBJECT : Impact of Devaluation on  
Bangladesh's Foreign Trade

1. The attached research notes explore potential effects of the 17 May devaluation of the taka.
2. Copies of this paper will be made available to other offices of the federal government if it is deemed in their interest. Any questions or comments should be addressed to

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Chief  
South Asia Branch  
Economic Research

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Attachments  
As stated

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Impact of the Devaluation of the Taka

On 17 May, Bangladesh devalued the taka by 37% from 19 taka = £1 to 30 taka = £1. At the present exchange rate of \$2.30 = £1 sterling, the devaluation is probably insufficient to induce a substantial increase in the supply of jute for export. This conclusion is tentative, however, because it is based on sparse data and speculative assumptions about farmer behavior. The effects of a variety of assumptions are projected below. The devaluation should help sales from existing stocks.

The combined effect of the decision to devalue and to maintain low ration prices for grain is to increase the pressure on government officials to seek aid financing for foodgrain imports. Aid financed grain will not now provide additional counterpart funds for development projects, but the harm to urban consumers has been minimized. The total quantity of imports will probably not be reduced.

Effects on Exports

The main benefit expected from the devaluation is an increase in foreign exchange earnings from exports of jute and jute goods, which comprise 90% of total exports. In order to maintain or expand the quantity of these exports, which compete with synthetic products, the

25X1

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export price must be lowered. To increase the domestic supply of raw jute from land which can instead be planted in rice, the farmgate jute/rice price ratio must increase enough to make jute the more profitable crop. Devaluation makes it possible to charge less (in sterling) for jute exports while paying the farmers more (in taka) for their crop. Since the Bangladesh government controls jute exports, it must decide whether to make the price changes which would have occurred almost automatically in a free market. This analysis assumes that it will do so.

The Supply of Jute

It is unlikely that the devaluation to taka 13.04 = US \$1 will induce many farmers who have a choice to grow jute instead of rice. This conclusion is based on the most probable assumptions about the technologies used, the farmer's view of his costs, comparative returns from rice production, and the extent to which an increase in the taka export prices will be passed back to farmers. Using other plausible assumptions, the devaluation might stimulate jute production and export. At best, however, the improvement in the supply of jute is questionable. The results of varying the assumptions are noted in Appendix 1. These calculations are limited by data gaps and therefore offer only a general indication of the effects of the devaluation.

If sterling depreciates substantially beyond \$2.30 = B1, jute prices expressed in sterling will probably rise since the United Kingdom does not dominate the market. This development could induce a greater increase in the supply of jute than projected in this memorandum.

IBRD analysis of Bangladesh's jute economy concluded that devaluation could improve the supply of jute. That conclusion, however, was based on November 1972 - January 1973 data. Since then, the situation has been altered by major changes in the international markets for jute and rice, and in domestic factor and crop prices.

#### Jute Exports

The international market probably will be able to absorb the increased quantities that might become available beginning in September 1976, the earliest relevant date. If the export price declines 15% -- sufficient to ensure that the market is not lost -- and jute is grown on an additional 250,000 acres, Bangladesh's earnings would be about \$5 million more than now. The revenue available to traders and government corporations would be about 752 million taka more than prior to devaluation.

However, if the export price is lowered, but farmers are not induced to grow more jute, then Bangladesh will earn \$50 million less than now. This would be preferable

to losing much of the market to synthetics. Taka revenue available to non-farmers would nevertheless increase by about 500 million taka, because the devaluation provides more taka than would be lost from the international price decrease. These calculations are only approximations. Details are presented in Appendix 2.

At international prices, the jute grown on an acre of land is worth more than the rice production foregone. In this sense, any change which increases jute exports is beneficial. The situation several years from now is even more important. Without jute, Bangladesh would have little to export and would be almost entirely at the mercy of aid donors. And if jute exports do not increase soon, a major part of the market may be permanently lost. Moreover, jute cultivation employs more people than does rice to achieve the same farmer profit per acre -- i.e., the income distribution effects of jute cultivation are probably preferable to those of rice. In the long run, there is always hope that research can improve jute yields or markets enough to counter the declining trend in world jute markets.

#### Jute Goods Exports

The potential benefits from increased exports of jute manufactures are even greater than for jute, since there is idle factory and labor capacity. On the other

hand, the impediments to expanding production come not only from markets and a limited supply of raw jute, but also from power shortages, labor disputes, transport problems, and poor management. Without improvement in these factors, industry may be unable to increase production sufficiently to take advantage of the market effect of devaluation.

#### Other Exports

Products other than jute and jute products account for only about 10% of export earnings. Their supply cannot be increased much in the year following devaluation. By removing the export subsidy on many very minor items the government took away most, but not all of the increased taka earnings from devaluation.

Private investment decisions may help expand exports if the benefits of the devaluation can be maintained in the long run. But the immediate problem is survival.

#### Illegal Trade

Devaluation probably will have little effect on small scale smuggling. The disparity between the official taka-Indian rupee rate and the black market rate has been reduced but not eliminated. The motive for capital flight has not been affected. The incentive to circumvent quantity restrictions on imports will remain. Two-way trade which takes advantage of relative price differences

in India and Bangladesh will remain profitable since the devaluation does not directly affect the relative prices of goods such as rice and saris. By increasing the relative (to rice) price of imported goods, the devaluation may even provide a small additional stimulus to smuggling.

Devaluation may help curtail jute smuggling, since it permits a rise in the price of jute. This could be an important benefit. However, jute smuggling may already have been reduced because the international market has declined most for the better quality jute which Bangladesh produced more cheaply than India.

#### Effects on Imports

If the devaluation succeeds in inducing some farmers to grow jute instead of rice, Bangladesh will have less rice available from domestic production. Compared to domestic production of 11.7 million metric tons, only about 100,000 tons will probably be lost as a result of devaluation. This small amount need not be replaced by imports. Even if jute acreage were to rise by 250,000 acres, the land least suited for rice would be switched first.

Although the devaluation has increased the taka price of grain imports, the volume of imports will still be a policy decision based primarily on estimates of

25X1

domestic production and of the amount required for official distribution. These estimates have been largely unaffected by the devaluation.

The Bangladesh government has apparently decided to leave the ration price of grain unchanged in order to minimize the impact of devaluation on ration recipients. Without the current subsidy, a family of three adults and two children under twelve would pay over 13 taka more a week for grain rations, compared with an urban laborer's average weekly wage of about 50 taka. The cost would be even higher if more rice and less wheat were in the ration. See Appendix 3. The impact of full cost pricing of grain would be immense, even though the ration price would still be far below the free market price that many people must pay. No increase in foreign aid could alleviate this burden without re-introducing a grain price subsidy. By continuing the subsidy, Dacca continues to favor government employees and urban residents who have access to the ration system.

The higher cost of grain imports, combined with the decision to leave the ration price of grain unchanged, increases Dacca's desire to have foodgrain imports financed by foreign aid. The devaluation has increased the subsidy on imported wheat sixfold, which, in the case of commercially purchased wheat, is a net drain on the

25X1

government budget. Although grain received as foreign aid has the same subsidy, it is not a drain because it is sold for an amount sufficient to cover the subsidy, while payment to the foreign seller is deferred or eliminated. See Appendix 4.

The potential benefits from counterpart funds are restricted as a result of the decision not to increase ration prices. The taka value of foreign commodity aid has been automatically increased by the devaluation. The increased value of foodgrain aid, however, will be used entirely to subsidize the ration price of grain and not for additional development projects. Although the accounting procedure will probably show that all counterpart funds are being used for agreed objectives, increased development funds will be available only if the quantity of grain is increased or the subsidy is reduced. In addition, the increased subsidy on any purchased grain must be financed, thereby reducing funds available for non-subsidy expenditures.

#### Non-food Imports

The quantity of aid financed imports will not be reduced by the devaluation, because the foreign currency value of the aid is unchanged. Imports for major projects will continue to be beneficial even when evaluated at increased taka costs. Some non-project commodities --

25X1

other than grain -- generate counterpart funds. If sold at full value, they will now provide additional taka funds which can be used for development. This would transfer income from those purchasing the aid goods to those benefiting from the counterpart money.

The taka price of imports financed by export earnings will go up, making them more expensive relative to local goods. Any reduction in quantity will be serious because these imports are essential to the economy, and there is little possibility of replacing them with domestic products. Although the impact of devaluation is inflationary, the higher prices will more accurately reflect the scarcity of foreign exchange.

About 5% - 10% of non-food imports are financed by persons who work abroad and earn foreign exchange, buy goods to be sent to Bangladesh and sell them for taka. This is often more profitable than a direct exchange of currency because these goods are not subject to internal distribution restrictions. Their taka price is probably determined by demand alone, and will not increase as a result of devaluation. The quantity of these imports may decline somewhat because the extent to which trade is more profitable than direct currency exchange has been reduced. An unchanged ad valorum tariff (levied on the taka value) would also reduce the trade profit.

Merchandise Trade Balance

The FY 1976 trade deficit, when measured in foreign exchange, will probably be slightly larger than this year. Jute export earnings will fall as a result of the 15% export price reductions necessary to maintain sales, but there will not have been time for the jute crop to respond to taka price increases. A reduction in jute smuggling, however, may increase legal exports. Total imports are not expected to decline unless a reduction in foreign aid makes this necessary.

Beginning in FY 1977, the long term benefits of the devaluation may begin to improve the merchandise trade balance. The jute crop may increase enough for the benefits of increased supply to slightly outweigh the loss from a price decline. Export earnings from jute would probably be only slightly more than now, but significantly higher than they would have been in the absence of price changes. Some of the minor exports may have had time to respond to the opportunities for simultaneous reduction in export price and increase in taka profit offered by devaluation. A major decline in imports still seems unlikely. This longer term estimate is extremely uncertain; devaluation is only one of many factors affecting the economy of Bangladesh.

## Appendix 1

Effect of Devaluation on a  
Farmer's Crop Decision

Question: What dollar/taka exchange rate makes it equally profitable to grow jute or paddy?

Calculations: There is more than one answer, principally for three reasons.

• There is more than one way of producing each crop. The older technologies do not use purchased fertilizer. Newer technologies use purchased fertilizer and higher cost seed. Each technology is associated with different input costs and yields. A farmer's ability to use some of these techniques depends on his access to inputs such as seed, fertilizer and technical knowledge. His choice is also affected by the cost of the inputs, his assessment of the risk, and his willingness to work.

• The rice price which enters the farmer's thinking is uncertain. It could be his share of the domestic free market price or the government procurement price. (The price of imported rice is also included for comparison.)

• How the farmer judges his costs is uncertain.

One set of costs used here assumes payment for all inputs

including family labor. The other set approximates the cost seen by a farmer who discounts the value of family labor.

The combination of two possible technologies for each crop, two ways of evaluating costs and three different rice prices yield 24 possible solutions for each jute price. Each solution represents a different judgment of how the Bangladesh farmer chooses between planting rice or jute.

The calculations are based on the assumption that all farmers think alike, that all pay the same price for inputs, and all have equally good land. If this were true, an exchange rate which makes jute profitable would lead to a crop switch on all of the approximately one million acres on which transfer is feasible. In reality, these assumptions do not hold, and an exchange rate which just swings the choice in favor of jute will lead to a shift in only part of the possible acreage.

#### Results

A. If the jute price is £ 200 per long ton FOB Chittagong:

An exchange rate of 16.72 taka = \$1 would be necessary to make jute as profitable as rice for the most likely

combination of assumptions: using old technology for jute and new technology for rice, the farmer considers the free market price of rice, and he ignores the implicit cost of family labor. However, for the next most likely combination of assumptions in which a farmer is restricted to using old technology for rice, the exchange rate of 13.04 taka = \$1 almost makes jute more profitable.

An exchange rate of 15 taka = \$1 would favor jute for all combinations of assumptions in which a farmer is restricted to using old technology for rice production. The international price of rice, which is still lower than the government's procurement price or the free market price, was favorable to jute even at the old exchange rate for a farmer restricted to using old technology for rice.

The devaluation to 13.04 taka = \$1 will induce a farmer who bases his decision on the internal procurement price for rice to shift from rice to jute.

B. If the jute export price is reduced to £ 170:

A farmer who bases his planting decision on the internal free market price of rice would not plant jute at any exchange rate lower than 14.9 taka = \$1. The devaluation to 13.04 taka = \$1 will induce a farmer who

25X1

bases his decision on the internal procurement price to shift from rice to jute.

Results of both runs are attached.

Data Used

K<sub>1</sub> Export price of jute: (Run 1) 16.899 dollars per maund (equal to £ 200 per long ton at \$2.30 = £ 1) and (Run 2) 14.365 dollars per maund (equal to £ 170 per long ton at \$2.30 = £ 1).

K<sub>2</sub> Farmer's share of export price: .65.

E - Taka/dollar exchange rate - determined by the equation.

TJ<sub>1</sub> Yield using old technology for jute: 15 maunds per acre.

TJ<sub>2</sub> Yield using new technology for jute: 18.5 maunds per acre.

CJ<sub>11</sub> Financial cost of producing jute with old technology: 1058 taka per acre.

CJ<sub>21</sub> Financial cost of producing jute with new technology: 1210 taka per acre.

CJ<sub>12</sub> Economic cost of producing jute with old technology: 673 taka per acre.

CJ<sub>22</sub> Economic cost of producing jute with new technology: 956 taka per acre.

K<sub>3</sub> Price of imported rice at port: 11.76 dollars per maund (i.e., \$320 per metric ton). This is the lowest price at which any recent transactions were proposed.

25X1

K<sub>5</sub> Procurement price for rice: 118 taka per maund.

K<sub>6</sub> Internal free market price of rice: 290 taka per maund.

K<sub>4</sub> Farmer's share of retail rice price: .70.

TR<sub>1</sub> Yield of old rice technology: 10.88 maunds of rice per acre.

TR<sub>2</sub> Yield of new rice technology: 17 maunds of rice per acre.

CR<sub>11</sub> Financial cost of producing rice with old technology: 811 taka per acre.

CR<sub>21</sub> Financial cost of producing rice with new technology: 1155 taka per acre.

CR<sub>12</sub> Economic cost of producing rice with old technology: 583 taka per acre.

CR<sub>22</sub> Economic cost of producing rice with new technology: 1369 taka per acre.

The cost data are based on estimates A and D in the World Bank report on the World Jute Economy, but adjusted on the assumption that rural labor costs have doubled and the cost of seed and fertilizer quadrupled since the Bank data were assembled during November 1972-January 1973.

Financial costs assume payment for all inputs, including family labor, and include some subsidy element when purchased inputs are used. Economic costs attempt to

25X1

25X1

shadow price all inputs, but several specification problems arise. The shadow price of labor is assumed by the Bank to be half of the prevailing rural wage rate. This is a good proxy for the cost of labor to the farmer who ignores his own input only when half the labor input is hired, as in the case of old jute technology, but a poor proxy in other cases. Also, the cost of imported inputs should vary as the exchange rate varies, but the Bank apparently used a shadow exchange rate of 10 taka = \$1 when making its calculations.

The equation used is:

$$(K_1)(K_2)(E)(TJ_j) - (CJ_{ij}) = (K_3)(E) \left. \begin{array}{l} (K_5) \\ (K_6)(K_4) \end{array} \right\} (TR_j) - (CR_{ij})$$

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25X1

Determination of Taka-Dollar Exchange Rate Which Makes  
Jute and Rice Equally Profitable to Farmer

Jute Yield	Jute Cost	Rice Yield	Rice Cost	Jute Price = £ 170 Per Long Ton		Jute Price = £ 200 Per Long Ton	
				Rice Price	Exchange Rate	Rice Price	Exchange Rate
15.00	1058	10.88	811	118.0	10.93	118.0	9.29
15.00	1058	17.00	1155	118.0	13.63	118.0	11.59
15.00	673	10.88	583	118.0	9.81	118.0	8.34
15.00	673	17.00	1369	118.0	9.35	118.0	7.95
18.50	1210	10.88	811	118.0	9.74	118.0	8.28
18.50	1210	17.00	1155	118.0	11.93	118.0	10.14
18.50	956	10.88	583	118.0	9.59	118.0	8.15
18.50	956	17.00	1369	118.0	9.22	118.0	7.84
15.00	1058	10.88	811	203.0	17.53	203.0	14.90
15.00	1058	17.00	1155	203.0	23.95	203.0	20.36
15.00	673	10.88	583	203.0	16.41	203.0	13.95
15.00	673	17.00	1369	203.0	19.67	203.0	16.72
18.50	1210	10.88	811	203.0	15.10	203.0	12.83
18.50	1210	17.00	1155	203.0	20.30	203.0	17.25
18.50	956	10.88	583	203.0	14.95	203.0	12.70
18.50	956	17.00	1369	203.0	17.59	203.0	14.95
15.00	1058	10.88	811	239.9	20.40	78.9	6.71
15.00	1058	17.00	1155	19.1	1.62	32.4	2.76
15.00	673	10.88	583	87.4	7.43	28.7	2.44
15.00	673	17.00	1369	136.7	11.63	232.8	19.80
18.50	1210	10.88	811	104.8	8.91	62.3	5.30
18.50	1210	17.00	1155	-23.8	-2.02	196.6	16.71
18.50	956	10.88	583	97.9	8.33	58.3	4.96
18.50	956	17.00	1369	178.7	15.19	-1476.0	-125.51

-17-

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Appendix 2  
Change in Earnings from Jute Exports

	<u>Additional Foreign Exchange (million dollars)</u>	<u>Additional Revenue to Trade &amp; Industry (million taka)</u>
<b>From present production</b>		
Raw jute	- 19	123
Jute goods	- 30	383
From new production	54	246
<b>TOTAL</b>	<b>5</b>	<b>752</b>

Methodology

Exports of raw jute in FY 75 are about \$125 million. If a 15% export price reduction is made in order to maintain this quantity of exports, the foreign exchange loss is \$19 million. The taka gain is 354 million, of which farmers receive 65%, leaving about 123 million taka additional revenue for trade and industry.

Exports of jute manufactures in FY 75 are about \$200 million. If a 15% export price reduction is made in order to maintain this quantity of exports, the foreign exchange loss is \$30 million and the additional taka gain is about 567 million. If raw jute provides half the value of jute manufactures and farmers receive 65% of the additional

25X1

value of raw jute, then 383 million additional taka are available to trade and industry.

If jute is grown on 250,000 additional acres each yielding 15 maunds, then 137,761 additional long tons of raw jute are available. At £ 170 per long ton and \$2.30 = £ 1, the additional foreign exchange earnings are \$53.86 million. The additional taka revenue is 702.4 million of which the farmer receives 65%, leaving 245.8 million taka for trade and industry.

If jute is grown on an additional one million acres rather than only on an additional 250,000, the increase in foreign exchange earnings would be \$215.4 million. However, as noted in Appendix 1, the present devaluation is unlikely to induce so large a supply adjustment.

25X1

Appendix 3

Budget Impact of Rationed Grain for a Family  
of Three Adults and Two Children Under Twelve Years Old

		<u>Weekly Rate</u> (Taka)
Current Ration System	2 seer wheat @ 1.25 taka . . . . . 1/2 seer rice @ 1.50 taka. . . . . Total per adult. . . . . 4 adult equivalents <sup>a/</sup> . . . . .	2.50 .75 3.25 13
Full Cost Pricing After Devaluation 13.04 taka = \$1	2 seer wheat @ \$185 per metric ton = 2.25 taka per seer. . . . 4.50 1/2 seer rice @ \$320 per metric ton = 3.89 taka per seer. . . . 1.95 Total per adult. . . . . 4 adult equivalents <sup>a/</sup> . . . . .	. . . . . 25.80 <sup>b/</sup>
Full Cost Pricing Immediately Before Devaluation 8.25 taka = \$1	2 seer wheat @ \$185 per metric ton = 1.42 taka per seer. . . . 2.85 1/2 seer rice @ \$320 per metric ton = 2.46 taka per seer. . . . 1.23 Total per adult. . . . . 4 adult equivalents <sup>a/</sup> . . . . .	. . . . . 16.33 <sup>b/</sup>
Free Market Price (Dacca)	1 seer coarse rice . . . . . Total per adult. . . . . 4 adult equivalents <sup>a/</sup> . . . . .	7.0 17.5 70

a. The ration for a child under twelve is one-half an adult ration.  
b. Plus distribution costs.

25X1

## Appendix 4

## Extent of Foodgrain Subsidy

On Wheat

Ration price of 50 taka per maund = 1340 taka per MT.  
\$185 per MT @ 8.25 = 1526 taka per MT; i.e., previous subsidy was 186 taka per MT plus distribution costs.  
\$185 per MT @ 13.04 = 2412 taka per MT; i.e., new subsidy is 1072 taka per MT plus distribution costs. This is an additional subsidy of 886 taka per MT.

Total subsidy on 2 million MT would be 2144 million taka plus distribution costs.

Additional subsidy on 2 million MT would be 1772 million taka.

On Rice

Ration price of 60 taka per maund = 1607 taka per MT.  
\$320 per MT @ 8.25 = 2640 taka per MT; i.e., previous subsidy was 1033 taka per MT plus distribution costs.  
\$320 per MT @ 13.04 = 4173 taka per MT; i.e., new subsidy is 2566 taka per MT plus distribution costs. This is an additional subsidy of 1533 taka per MT plus distribution costs.

The actual subsidy in FY 1975 is reported as 1670 million taka of which 714 million taka are attributable to purchased foodgrain. The actual subsidy includes distribution costs and higher international prices than used above.